REMARKS

Status of the Claims

Claim 27 has been canceled without prejudice to or disclaimer of the subject matter contained therein. Claims 1, 13, and 23 have been amended to increase sequence identity to at least 95% and to recite specific pesticidal function (*i.e.*, activity against insect pests of the Homopteran or Lepidopteran orders). Support for these amendments may be found throughout the specification, for example on page 16, line 21, continuing through page 20, line 12, and on page 8, line 29, continuing through page 9, line 3. Claims 1, 13, and 23 have also been amended to delete reference to nucleic acids encoding pesticidal fragments of SEQ ID NO:20, nucleic acids comprising at least 30 contiguous nucleotides of the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14, and pesticide-encoding nucleic acids that are complementary to any of the recited nucleic acids. Claim 23 has also been amended to incorporate the limitation of claim 27 and to include the step of "regenerating a plant" from the recited plant cell. Support for the latter amendment can be found throughout the specification, for example, in the experimental section in working examples such as Examples 15, 16, 18, 19, and 20. Claim 19 has been amended to indicate that the claimed seed comprises the recited expression cassette. Claims 22 and 31 have been amended to delete reference to Hymenopteran insects. No new matter has been added by way of any claim amendments.

These claim amendments were not presented earlier as Applicants earnestly believed that the previously presented claims recited patentable subject matter. Pursuant to 37 C.F.R. §1.116 and the *Manual of Patent Examining Procedure* (MPEP), any amendment that will place the application in condition for allowance may be entered after final rejection (MPEP § 714.12). Applicants believe that this amendment places claims 1-7, 11-26, 28-31, and 38-43 in condition for allowance. The Examiner is respectfully requested to enter these claim amendments to further prosecution or to place the application in better condition for appeal.

Claims 1-7, 11-26, 28-31, and 38-43 are pending in the present application. Reexamination and reconsideration of the claims are respectfully requested. The Examiner's comments in the Office Action are addressed below in the order set forth therein.

The Objection to the Abstract Should Be Withdrawn

The abstract is objected to as it allegedly is not descriptive of the instant application. This objection is respectfully traversed. However, in order to advance prosecution, Applicants have amended the abstract to recite compositions and methods for isolated nucleic acid molecules encoding orally active *Androctonus amoreuxi* pesticidal polypeptides. Applicants submit that the amended abstract describes the disclosure sufficiently to assist readers in deciding whether there is a need to consult the full text for additional details. Accordingly, reconsideration and withdrawal of the objection are respectfully requested.

The Objection to the Title Should Be Withdrawn

The title is objected to as it allegedly is not descriptive of the instant application. This objection is respectfully traversed. However, in order to advance prosecution, Applicants have amended the title to recite isolated nucleic acid molecules encoding orally active *Androctonus amoreuxi* pesticidal biopeptides. Applicants submit that the amended title is clearly indicative of the invention to which the claims are directed. Accordingly, reconsideration and withdrawal of the objection are respectfully requested.

The Rejection of the Claims Under 35 U.S.C. § 112, First Paragraph, Written Description, Should Be Withdrawn

Claims 1-7, 13-19, 21-27, 29-31, 38, 40, and 42 are rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the written description requirement of section 112. Specifically, the Examiner asserts that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention at the time the application was filed. Claim 27 has been canceled, rendering this rejection moot as applied to this claim. This rejection is respectfully traversed as applied to claims 1-7, 13-19, 21-26, 29-31, 38, 40, and 42.

Applicants have amended independent claims 1, 13, and 23 to recite a nucleotide sequence encoding a polypeptide having at least 95% sequence identity to the amino acid

sequence set forth in SEQ ID NO:20, and a nucleotide sequence having at least 95% sequence identity to the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14. Independent claims 1, 13, and 23 have also been amended to include the limitation that the recited polypeptides retain pesticidal activity against insect pests of the Homopteran or Lepidopteran orders.

The Claimed Sequences Are Adequately Described in the Specification

The written description inquiry focuses on whether the specification reasonably conveys to one skilled in the art whether Applicants invented the claimed subject matter. Thus, the relevant inquiries are: What is Applicants' claimed invention? What is now claimed? The claimed invention is directed to nucleotide sequences having specific structural and biological properties. The specification provides both the DNA and amino acid sequences of a representative embodiment of the claimed sequences. Indeed, the Examiner has acknowledged that these claims drawn to specific sequences would be allowable if rewritten as independent claims.

Applicants note that the description of a representative number of species does not require the description to be of such specificity that it would provide individual support for each species that the genus embraces. 66 Fed. Reg. 1099, 1106 (2001). Satisfactory disclosure of a "representative number" depends on whether one of skill in the art would recognize that Applicants were in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed. 66 Fed. Reg. 1099, 1106 (2001). Applicants submit that the knowledge and level of skill in the art would allow a person of ordinary skill to envision the claimed invention, *i.e.*, nucleic acid molecules encoding pesticidal polypeptides having at least 95% sequence identity to SEQ ID NO:20, and pesticide-encoding nucleic acid molecules having at least 95% sequence identity to the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14.

The description of a claimed genus can be by structure, formula, chemical name, or physical properties. *See, Ex parte Maizel*, 27 USPQ2d 1662, 1669 (B.P.A.I. 1992), citing *Amgen v. Chugai*, 927 F.2d 1200, 1206 (Fed. Cir. 1991). A genus of DNAs may therefore be

described by means of a recitation of a representative number of DNAs defined by nucleotide sequence and falling within the scope of the genus, *or* by means of a recitation of structural features common to the genus, which features constitute a substantial portion of the genus. *See*, *Regents of the University of California v. Eli Lilly & Co.*, 119 F.3d 1559, 1569 (Fed. Cir. 1997) (referred to herein as "*Lilly*"); *see also* Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, First Paragraph, "Written Description" Requirement, 66 Fed. Reg. 1099, 1106 (2001) (referred to herein as the "Guidelines"). All of the pending claims recite a functional limitation (*i.e.*, activity against insect pests of the Homopteran or Lepidopteran orders) and also require a predictable structure of a nucleic acid molecule encoding a polypeptide having at least 95% sequence identity to SEQ ID NO:20, or a nucleotide sequence having at least 95% sequence identity to the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14. Under both Lilly and the Guidelines, these requirements for function in combination with the recitation of a predictable structure should be sufficient to satisfy the written description requirement.

Applicants note that the Federal Circuit has explicitly stated that

> *Eli Lilly* did not hold that all functional descriptions of genetic material necessarily fail as a matter of law to meet the written description requirement; rather, the requirement may be satisfied if in the knowledge of the art the disclosed function is sufficiently correlated to a particular, known structure.

Amgen, Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1332 (Fed. Cir. 2003). *See also, Moba, B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1320 (noting that "[i]n more recent cases, however, this court has distinguished *Lilly*" and further noting that in *Enzo Biochem, Inc. v. Gen-Probe, Inc.*, 323 F.3d 956 (Fed. Cir. 2002), "neither the specification nor the deposited biological material recited the precise 'structure, formula, chemical name, or physical properties' required by *Lilly*").

Example 14 of the "Synopsis of Application of Written Description Guidelines" is directed to a generic claim: a protein having at least 95% sequence identity to the sequence of SEQ ID NO: 3, wherein the sequence catalyzes the reaction A→B. The synopsis materials conclude that the generic claim of Example 14 is sufficiently described under §112, first

paragraph, because: 1) "the single sequence disclosed in SEQ ID NO: 3 is representative of the genus"; and 2) the claim recites a limitation requiring the compound to catalyze the reaction from A→B. The synopsis materials conclude that one of skill in art would recognize that the Applicants were in possession of the necessary common attributes possessed by the members of the genus.

Following the analysis of Example 14, Applicants submit that the present claims satisfy the written description requirements of § 112, first paragraph. Specifically, the claims of the present invention encompass a nucleic acid molecule encoding a polypeptide having at least 95% sequence identity to SEQ ID NO:20, or a nucleotide sequence having at least 95% sequence identity to the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14, where the encoded polypeptide is pesticidal for insect pests of the Homopteran or Lepidopteran orders. As in Example 14, the specification discloses a nucleic acid molecule encoding a polypeptide comprising the amino acid sequence set forth in SEQ ID NO:20 and nucleotide sequences comprising the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14, and the claims recite a limitation requiring the molecule to have a specific function (*i.e.*, pesticidal activity against insect pests of the Homopteran or Lepidopteran orders). Consequently, contrary to the conclusion stated in the Office Action, the sequences encompassed by the claims are defined by relevant identifying physical and chemical properties. The necessary common features of the claimed genus are clear.

In summary, the description of a representative number of species *does not* require the description to be of such specificity that it would provide individual support for each species that the genus embraces. Applicants submit that the relevant identifying physical and chemical properties of the disclosed genus would be clearly recognized by one of skill in the art and consequently, Applicants were in possession of the necessary common attributes or features of the elements possessed by the members of the genus. Accordingly, the rejection of claims 1-7, 13-19, 21-26, 29-31, 38, 40, and 42 under 35 U.S.C. §112, first paragraph, for lack of written description should be withdrawn.

The Rejection of the Claims Under 35 U.S.C. § 112, First Paragraph, Enablement, Should Be Withdrawn

Claims 1-7, 13-19, 21-27, 29-31, 38, 40, and 42 are rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the enablement requirement of section 112. Specifically, the Examiner asserts that the specification does not enable an ordinary person skilled in the art to make and/or use the invention commensurate in scope with these claims. Claim 27 has been canceled, rendering this rejection moot as applied to this claim. This rejection is respectfully traversed as applied to claims 1-7, 13-19, 21-26, 29-31, 38, 40, and 42.

As discussed above, Applicants have amended independent claims 1, 13, and 23 to recite a nucleotide sequence encoding a polypeptide having at least 95% sequence identity to the amino acid sequence set forth in SEQ ID NO:20, and a nucleotide sequence having at least 95% sequence identity to the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14. Independent claims 1, 13, and 23 have also been amended to include the limitation that the recited polypeptides retain pesticidal activity against insect pests of the Homopteran or Lepidopteran orders.

The Specification Fully Supports the Claims

In contrast to the conclusion reached in the Office Action, Applicants submit that support is provided for both the sequence identity limitations of the claims and the functional limitation of the claims. Guidance for determining percent identity of sequences is provided in the specification on page 16, line 21, continuing through page 18, line 5; and on page 23, line 14, continuing through page 28, line 18. The procedures for making nucleotide sequences encoding variants (*e.g.*, of SEQ ID NO:20) are conventional in the art (see, *e.g.*, page 18, lines 6-18 of the specification, which lists a number of exemplary references for such procedures). Additionally, the specification provides ample support for assays that are used to identify variants having the claimed pesticidal activity (see, *e.g.*, Example 5, *Corn Rootworm Bioassay*; Example 6, *Homopteran Bioassay*; and Example 17, *Identification of Aam1 as a Homopteran and Lepidopteran Orally Active Peptide*). Thus, support is provided to enable one of skill in the art

to make and use a nucleic acid and/or nucleotide construct meeting the sequence identity and functional limitations of the claims.

The Examiner Acknowledges the Broad Teachings of the Specification

The Examiner concludes that the specification "while being enabling for nucleic acids encoding SEQ ID NO:20, . . . does not reasonably provide enablement for nucleic acids encoding pesticidal proteins with 90% identity to SEQ ID NO:20 [or] pesticide-encoding nucleic acids with 90% identity to bases 73-249 of SEQ ID NO:17 or bases 64-240 of SEQ ID NO:14 ..." (Office Action, mailed May 26, 2006, page 7, lines 11-14). Interestingly, the Examiner acknowledges that the specification does provide "guidance for isolation of proteins from arthropod venom and sequencing of the proteins (examples 1-4), southern corn rootworm and homopteran feeding assays (examples 5-6), construction of baculoviruses and expression of the proteins in insect cells (examples 7-8), construction of plant expression vectors encoding the pesticidal protein operably linked to a secretion signal sequence (examples 9-12), . . . [and] general guidance for transformation of rice, maize, soybean and assay of the plants for insect resistance (examples 15-20)" (Office Action, page 8, lines 11-18). The Examiner further acknowledges that the specification teaches that "SEQ ID NO:20 is Aam1 from Androctonus amoreuxi; SEQ ID NO:14 is a nucleic acid encoding it that uses rice-preferred codons and the sweet potato sporamin signal sequence, while SEQ ID NO:17 is optimized for expression in Streptomyces coelicolor and has the BAA signal peptide" (Office Action, page 8, lines 18-21).

In view of these acknowledgments, Applicants respectfully submit that the present claims are enabled by the specification.

The Examiner's Reasoning is not Well Founded

In contrast to the conclusions stated in the Office Action, guidance is provided as to what sequence alterations may be made and still provide a nucleic acid species encompassed by the claim. Applicants have provided the exemplary amino acid sequence of SEQ ID NO:20 and the exemplary nucleic acid sequences set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14. The claimed sequences of the invention vary from these

sequence by structural parameters (*i.e.*, at least 95% percent sequence identity). Guidance for determining percent identity of sequences is provided in the specification on page 16, line 21, continuing through page 18, line 5; and on page 23, line 14, continuing through page 28, line 18.

Moreover, independent claims 1, 13, and 23 specify that the nucleotide sequence encodes a polypeptide which is pesticidal for insect pests of the orders Homopteran or Lepidopteran and therefore these claims (and claims dependent thereon) encompass functional variants. Guidance regarding alterations that allow the sequence to retain the specified pesticidal activity is also provided. See, for example, page 18, lines 6-18 of the specification, which lists a number of exemplary references for such procedures. In addition, methods for assaying pesticidal activity of proteins are routine in the art and are also described in the specification, for example in the experimental section in working examples such as Example 5, *Corn Rootworm Bioassay*; Example 6, *Homopteran Bioassay*; and Example 17, *Identification of Aaml as a Homopteran and Lepidopteran Orally Active Peptide*.

On page 10, lines 5-10 of the Office Action, the Examiner reasons that to enable the claims, one must make and test all possible combinations of nucleic acids falling within the scope of the claim.

> Making all possible single amino acid substitutions in an 58 amino acid long protein like that of SEQ ID NO:20 would require making and analyzing 19^{58} nucleic acids; these proteins would have 98.3% identity to SEQ ID NO:20. Because nucleic acids encoding proteins with 90% identity to SEQ ID NO:20 would encode proteins with 2 amino acid substitutions, many more than 19^{58} nucleic acids would need to be made and analyzed.

The Examiner's analysis is improper. As held by the court in *In re Borkowski*, 422 F.2d 904, 909, 164 U.S.P.Q. (BNA) 642, 645 (C.C.P.A. 1970), it is inappropriate "to study appellants' disclosure, to formulate a conclusion as to what he (the Examiner) regards as the broadest invention supported by the disclosure, and then to determine whether appellant's claims are broader than the Examiner's conception of what 'the invention' is." In the present case, the methods and examples disclosed in the specification readily teach one of skill in the art to make and test nucleic acid molecules encoding pesticidal polypeptides having at least 95% sequence

identity to SEQ ID NO:20, and pesticide-encoding nucleic acid molecules having at least 95% sequence identity to the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14.

Under the facts of the present application, one skilled in the art would understand whether a particular protein has at least 95% sequence identity with SEQ ID NO:20 or whether a particular nucleotide sequence has at least 95% sequence identity to the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14 as set forth in the claims. In addition, functional assays are disclosed in the specification that provide sufficient guidance for one skilled in the art to determine whether a particular polynucleotide is within the scope of the claims. Thus, the claims are fully enabled.

The Examiner Mischaracterizes the Lazar and Hill References

The Examiner argues that making conservative amino acid substitutions does not produce predictable results and cites Lazar *et al.*, *Molecular & Cellular Biology* 8:1247-1252 (1988) in support of her position. The Examiner indicates that the conservative substitution of glutamic acid for aspartic acid at position 47 reduced biological function of transforming growth factor alpha (TGF-α) while nonconservative substitutions with alanine or asparagine had no effect. The Examiner fails to consider the entire teachings of the reference.

First, the Lazar reference is drawn to studying TGF-α. TGF-α is a mammalian polypeptide of 50 amino acids. The polypeptide is in no way related to the orally active *Androctonus amoreuxi* proteins of the present invention. The reference relating to TGF-α does not bear any relevance to the claimed *Androctonus amoreuxi* sequences.

Secondly, with respect to the modifications described by Lazar *et al.*, two amino acids of TGF-α which were known to be conserved among the family of EGF-like polypeptides were modified. It would come as little surprise to one skilled in the art that the modification of such a conserved amino acid should lead to the loss of function described by the authors.

The Examiner additionally cites Hill *et al.*, *Biochemical & Biophysical Research Communications* 244:573-577 (1998) as supporting the position that substitution of a residue with a conservative amino acid can drastically reduce enzyme activity. The Examiner cites Hill

et al. as teaching that when three histidines that are maintained in ADP-glucose pyrophosphorylase across several species are substituted with the 'nonconservative' amino acid glutamine, there is little effect on enzyme activity, while the substitution of one of those histidines with the 'conservative' amino acid arginine drastically reduced enzyme activity.

First, the Hill reference is drawn to studying ADP-glucose pyrophosphorylase. The polypeptide is in no way related to the orally active *Androctonus amoreuxi* proteins of the present invention. The reference relating to ADP-glucose pyrophosphorylase does not bear any relevance to the claimed *Androctonus amoreuxi* sequences.

Secondly, with respect to the modifications described by Hill *et al.*, the modified residues were conserved among bacterial and plant ADP-glucose pyrophosphorylases. As set forth in the first line of the abstract, "[t]wo **absolutely conserved** histidines and a third **highly conserved** histidine are noted in 11 bacterial and plant ADP-glucose pyrophosphorylases" (emphasis added). These **absolutely** and **highly conserved** histidines were mutagenized and characterized in the paper. It would come as little surprise to one skilled in the art that the modification of one of these conserved amino acids should lead to the loss of function described by the authors.

The Lazar and Hill References Support Applicants' Position That it is Within the Skill of the Art to Make and Test Modifications

The Lazar reference published in 1988 and the Hill reference published in 1998, both demonstrate that one of skill in the art well before 2002 (the priority date of the present application) could make substitutions in polypeptide sequences and test for activity. Nothing more is required in the present application.

As assays for determining whether the modified sequences would retain activity were disclosed, one of skill in the art as of the filing date of the present application would have been able to make such modifications and test them for pesticidal activity. Nothing more is required to fully enable the claims. Accordingly, one of skill in the art would be able to determine the functionality of polypeptides encompassed by the claimed invention without resorting to undue experimentation and therefore the enablement requirement is satisfied.

That Some Experimentation May be Necessary Does Not Indicate That the Claims are Not Enabled

The Federal Circuit has repeatedly stated that enablement is not precluded by the necessity for some experimentation, so long as the experimentation needed to practice the invention is not undue. *In re Wands* 8 USPQ2d 1400 (Fed Cir 1988). Furthermore, a considerable amount of experimentation is permissible, if it is merely routine, or if the specification provides a reasonable amount of guidance in which the experimentation should proceed. *Id.*

Applicants stress that when evaluating the quantity of experimentation required, the court looks to the amount of experimentation required to practice a single embodiment of the invention, rather than the amount required to practice every embodiment of the invention, as the Examiner implies. For example, in *Wands*, the claims at issue were drawn to immunoassay methods using any monoclonal antibody having a binding affinity for HbsAg of at least 10^{-9} M. The PTO had taken the position that the claim was not enabled because undue experimentation would be needed to make the monoclonal antibodies required for the assay. The Federal Circuit reversed and held that the claims were enabled, as the amount of experimentation required to isolate monoclonal antibodies and screen for those having the correct affinity was not undue. *See Id.* Clearly, the Federal Circuit did not contemplate that every antibody useful in the methods of the claim must be identified. Rather, the court considered the amount of experimentation required to identify one or a few monoclonal antibodies having the required affinity. *See also, Johns Hopkins University v. Cellpro*, 931 F. Supp. 303, 324 (D. Del. 1996), *aff'd in part, vacated in part, and remanded*, 47 USPQ2d 1705 (Fed. Cir. 1998) (stating that "[t]he specification need only enable one mode of making the claimed invention").

In the instant case, the quantity of experimentation required to practice independent claim 1 amounts to two steps. First, generating a nucleotide sequence encoding a polypeptide having at least 95% sequence identity to the amino acid sequence set forth in SEQ ID NO:20, or a nucleotide sequence having at least 95% sequence identity to the coding sequence set forth in nucleotides 73-249 of SEQ ID NO:17 or nucleotides 64-240 of SEQ ID NO:14. Second, assaying the encoded polypeptide for functional activity. Such assays, while known in the art,

have further been presented in the specification (see, *e.g.*, Examples 5, 6, and 17). One of skill in the art would appreciate that both of these steps are within the skill of those in the art and that this degree of experimentation is not considered undue. "[A] specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented *must* be taken as in compliance with the enabling requirement of the first paragraph of § 112 *unless* there is reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support." *In re Marzocchi*, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971) (emphasis in original). Consequently, contrary to the conclusions stated in the Office Action, the quantity of experimentation necessary and the amount of guidance presented in the specification is sufficient to enable the claims. In view of this discussion, Applicants respectfully request that the rejection of claims 1-7, 13-19, 21-26, 29-31, 38, 40, and 42 under 35 U.S.C. §112, first paragraph, for lack of enablement be withdrawn.

The Rejection of the Claims Under 35 U.S.C. § 112, Second Paragraph, Should Be Withdrawn

Claim 19 is rejected under 35 U.S.C. § 112, second paragraph, for allegedly being indefinite, and claims 23-31, 42, and 43 are rejected under 35 U.S.C. § 112, second paragraph, for allegedly omitting essential steps. This rejection is respectfully traversed as applied to claims 19, 23-31, 42, and 43.

The Examiner asserts that is unclear what type of expression construct was used to transform the seed of claim 19. As previously made of record, Applicants submit that one of skill in the art would clearly understand that the seed of claim 19 is transformed with the expression cassette stably incorporated into the genome of the parent plant (as recited in claim 13). However, solely to advance prosecution, Applicants have amended claim 19 to expressly indicate that the claimed seed comprises the recited expression cassette. Accordingly, reconsideration and withdrawal of the rejection as applied to this claim are respectfully requested.

The Office Action further asserts that claims 23-31, 42, and 43 omit steps involved in regenerating a plant from a plant cell. As previously made of record, Applicants submit that they

have properly defined the metes and bounds of the claimed invention as found in claims 23-31, 42, and 43 with a reasonable degree of precision and particularity. However, solely to advance prosecution, Applicants have amended independent claim 23 to include the step of "regenerating a plant" from the recited plant cell. Accordingly, reconsideration and withdrawal of the rejection as applied to these claims are respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that all the objections and rejections have been obviated or overcome and the claims are in condition for allowance. Early notice to this effect is solicited. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject Application, the Examiner is invited to call the undersigned attorney.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

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Nora C. Martinez

The present invention provides compositions and methods for isolated nucleic acid molecules encoding orally active *Androctonus amoreuxi* pesticidal polypeptides. Compositions include novel nucleotide sequences encoding *Androctonus amoreuxi* pesticidal polypeptides, and biologically active variants thereof. Further provided are methods for modulating the pesticide resistance of plants using the nucleotide sequences disclosed herein. One method comprises stably transforming into the genome of a plant cell a nucleotide sequence of the present invention operably linked to a heterologous promoter and regenerating a stably transformed plant that expresses the nucleotide sequence. An additional method comprises incorporating a nucleotide sequence of the present invention operably linked to a heterologous promoter into a microorganism and applying said microorganism to the environment of a plant.